

Having described the invention, that which is claimed is:

1. A photovoltaic device comprising a first substrate, a second substrate, at least one photovoltaic element positioned between the first and second substrates, a front CTO contact positioned between the first substrate and the photovoltaic element where the front CTO contact comprises a CTO having a hardness of at least about 200 Number of Taber Abraser passes, measured when using a CTO layer that is 6000 angstroms thick.
2. The photovoltaic device of Claim 1 wherein front CTO contact comprises a CTO having a hardness of at least about 300 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.
3. The photovoltaic device of Claim 1 wherein front CTO contact comprises a CTO having a hardness of at least about 400 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.
4. The photovoltaic device of Claim 1 wherein front CTO contact comprises a CTO having a hardness of at least about 500 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.
5. The photovoltaic device of Claim 1 wherein front CTO contact comprises a CTO having a hardness of at least about 600 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.
6. The photovoltaic device of Claim 1 wherein front CTO contact comprises a CTO having a hardness of at least about 700 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.
7. A photovoltaic module comprising the photovoltaic device of Claim 1.
8. A thin film photovoltaic device comprising a front CTO contact where the CTO has a hardness of at least about 300 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.
9. A Photovoltaic module comprising the photovoltaic device of Claim 8.
10. The photovoltaic device of Claim 1 wherein the CTO contact comprises tin oxide.
11. The photovoltaic device of Claim 1 wherein the photovoltaic device comprises amorphous silicon.
12. The photovoltaic device of Claim 1 wherein the CTO contact has a thickness of about 2000 to about 8000 angstroms.

13. A method of making a photovoltaic device comprising using a front contact CTO layer having a hardness of at least about 200 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.

5 14. The method of Claim 13 wherein the CTO layer has a hardness of at least about 200 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.

15. The method of Claim 13 wherein the CTO layer has a hardness of at least about 400 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.

10 16. The method of Claim 13 wherein the CTO layer has a hardness of at least about 500 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.

15 17. The method of Claim 13 wherein the CTO layer has a hardness of at least about 600 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.

18. The method of Claim 13 wherein the CTO layer has a hardness of at least about 700 Number of Taber Abraser passes measured when using a CTO layer that is 6000 angstroms thick.

19. The method of Claim 13 wherein the CTO contact comprises tin oxide.

20 20. The method of Claim 13 wherein the CTO contact is about 2000 to about 8000 angstroms thick.